

## Tutorial Set 4: Remote sensing

### Exercise Site20\_4-2 NDVI calculation

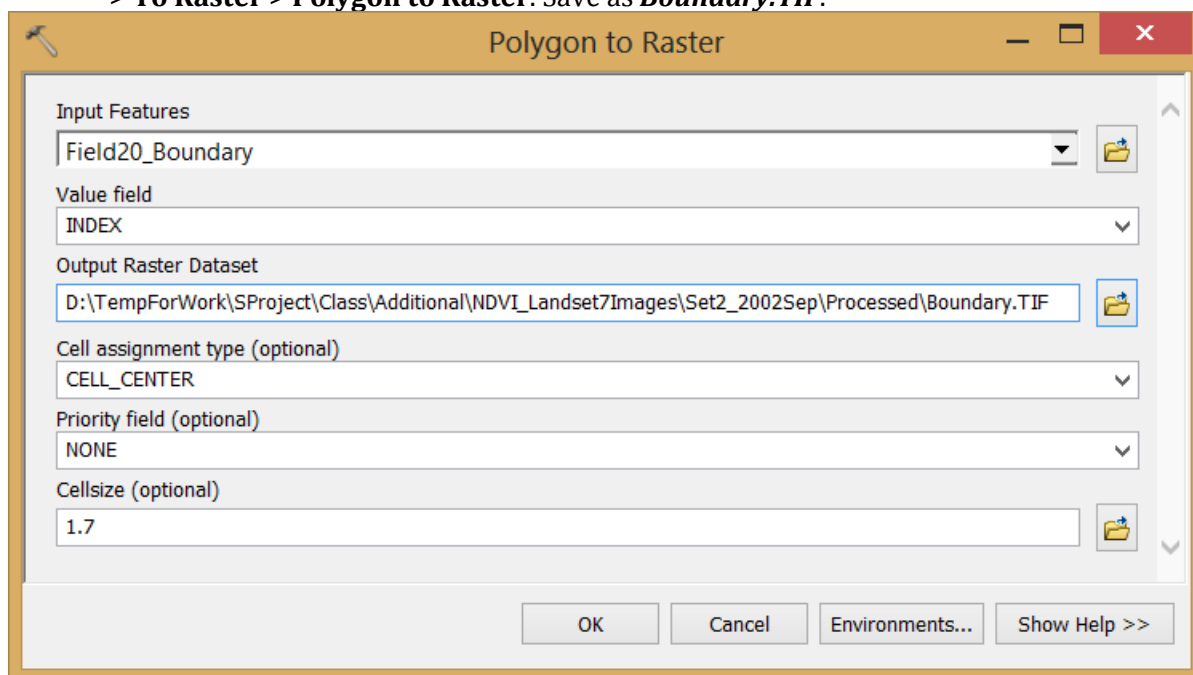
**Learning objective:** Calculating NDVI using band RED and band NIR

**Techniques:** Use the Raster Calculator to clip and compose a new image

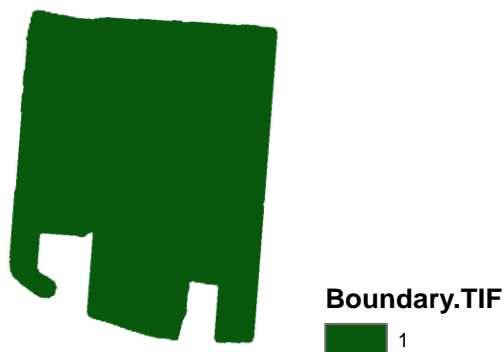
**Data Source:** Dataset5

#### Part 1: Clipping images to site boundary

1. Convert *Field20\_Boundary.shp* (vector) to a raster. Go to **ArcToolbox > Conversion Tools > To Raster > Polygon to Raster**. Save as *Boundary.TIF*.



2. Result of Boundary.TIF

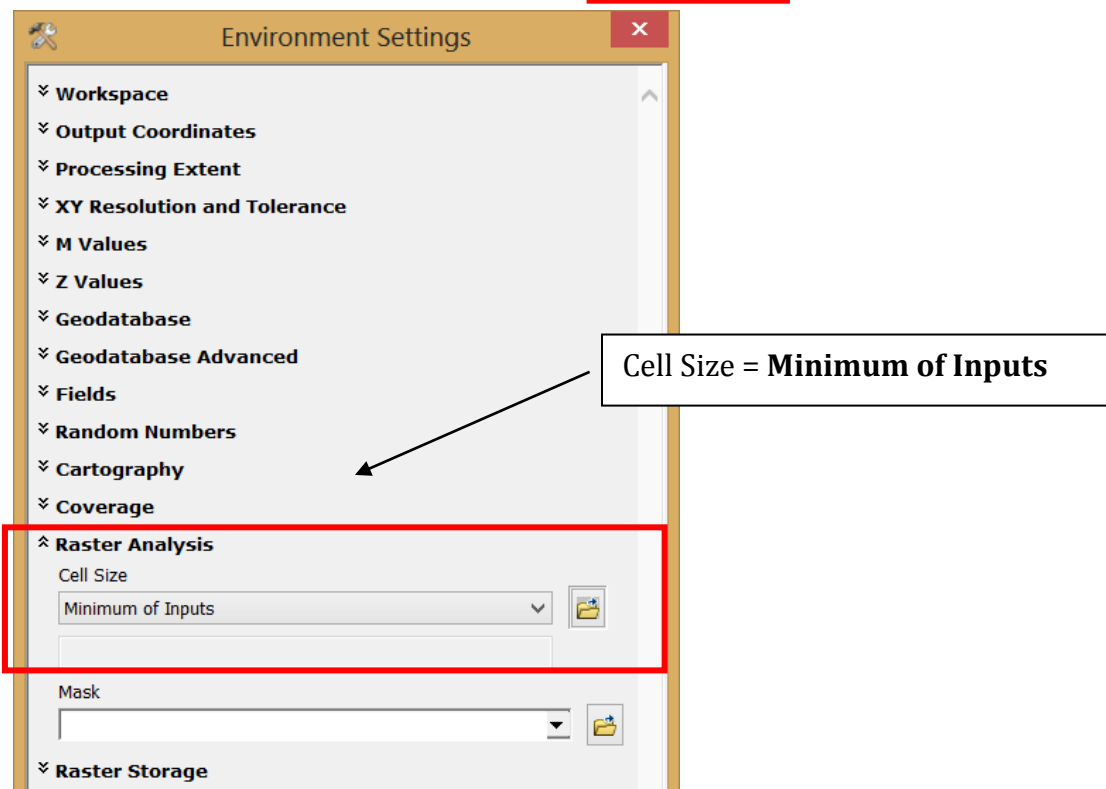
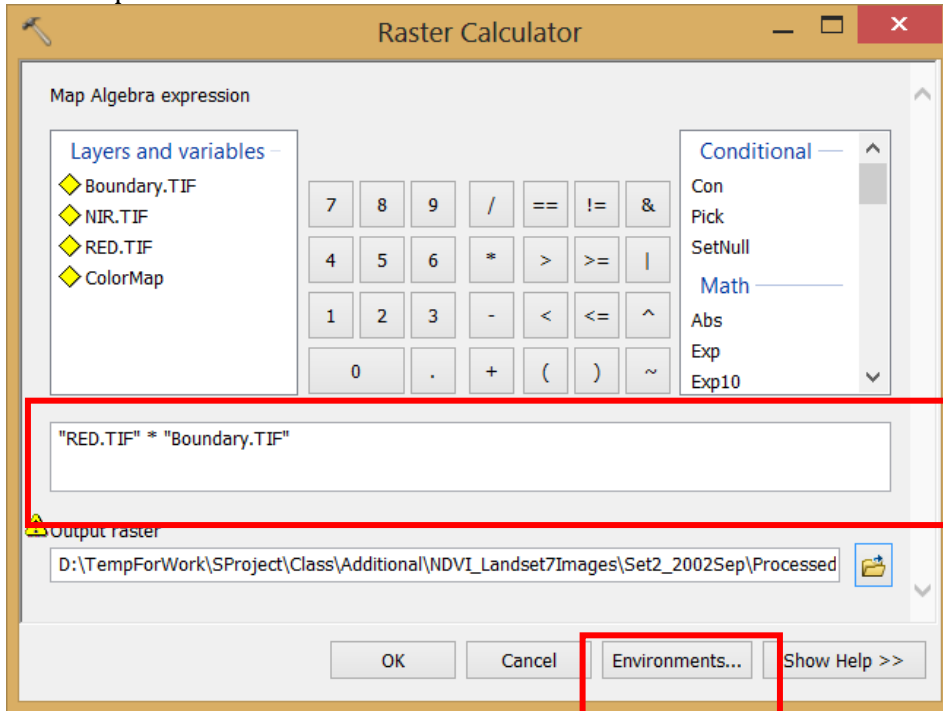


3. Clip **RED.TIF** and **RED.TIF** to the boundary of **Boundary.TIF**. Go to **Spatial Analyst Tools > Map Algebra > Raster Calculator**.

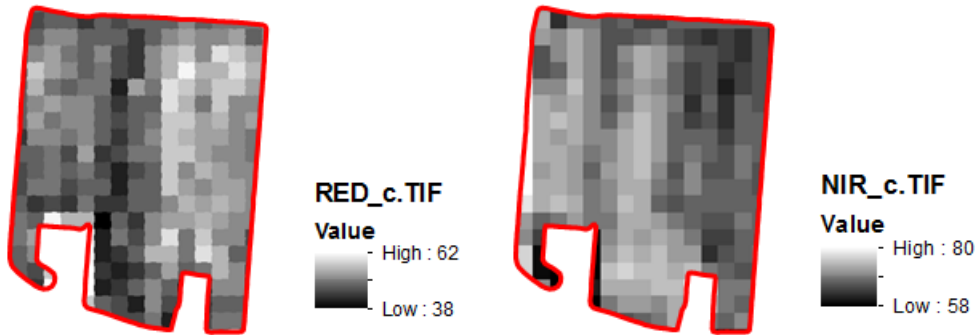
*Algebra expression* = **RED.TIF \* Boundary.TIF**

*Output raster* = **RED\_c.TIF**

Click **Environment Setting** to change the cell size = **MINIMUM of INPUT** for the output raster.



4. Repeat previous step to clip *NIR.TIF*.
5. Results of the clipped images: *RED\_c.TIF* and *NIR\_c.TIF*.

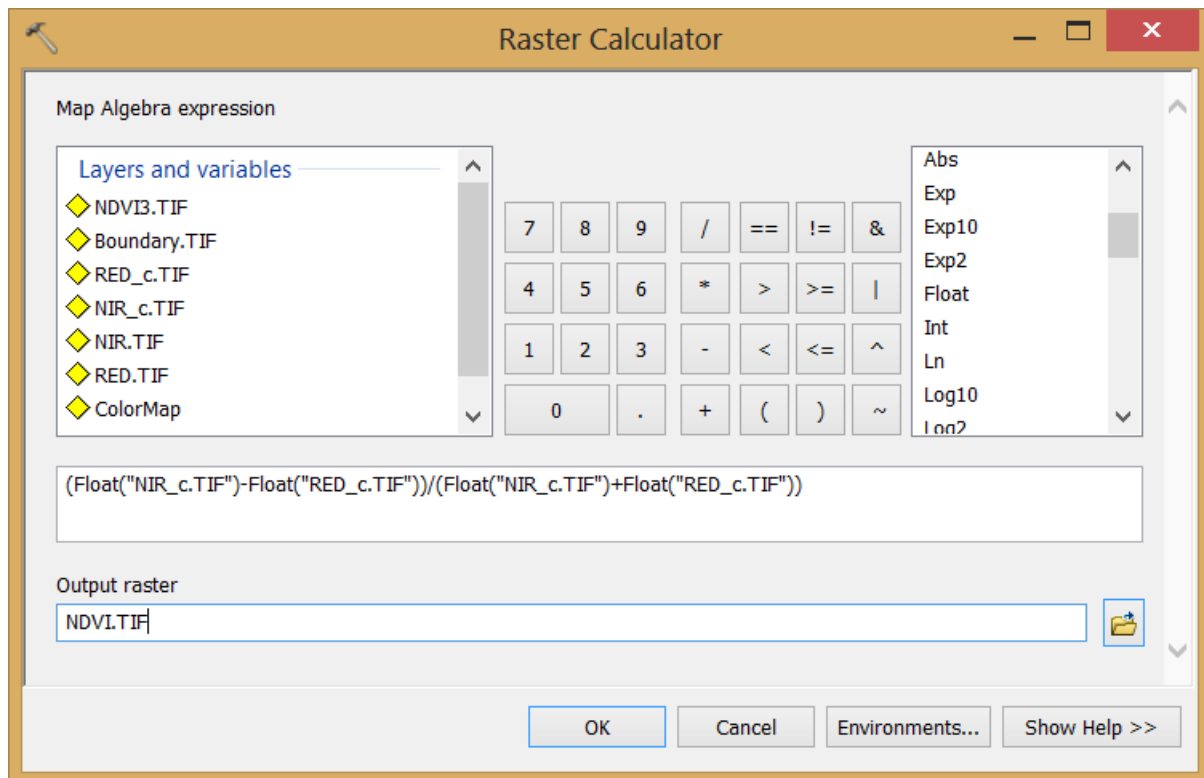


**Part 2: Calculating NDVI**

1. Go to ArcToolbox > Spatial Analyst Tools > Map Algebra > Raster Calculator

*Algebra expression* =  
 $(\text{Float}(\text{"NIR\_c.TIF"}) - \text{Float}(\text{"RED\_c.TIF"})) / (\text{Float}(\text{"NIR\_c.TIF"}) + \text{Float}(\text{"RED\_c.TIF"}))$

*Output raster* = **NDVI.TIF**



2. Result of NDVI image.

